



US005862325A

United States Patent [19][11] **Patent Number:** **5,862,325****Reed et al.**[45] **Date of Patent:** **Jan. 19, 1999****[54] COMPUTER-BASED COMMUNICATION SYSTEM AND METHOD USING METADATA DEFINING A CONTROL STRUCTURE**

[75] Inventors: **Drummond Shattuck Reed; Peter Earnshaw Heymann; Steven Mark Mushero; Kevin Benard Jones; Jeffrey Todd Oberlander; Dan Banay**, all of Seattle, Wash.

[73] Assignee: **Intermind Corporation**, Seattle, Wash.

[21] Appl. No.: **722,314**

[22] Filed: **Sep. 27, 1996**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 609,115, Feb. 29, 1996.

[51] Int. Cl.⁶ **G06F 17/30; G06F 17/40**

[52] U.S. Cl. **395/200.31; 395/200.42; 395/200.58; 395/200.72; 395/200.74; 707/10; 707/203; 707/204**

[58] Field of Search **395/200.3-200.33, 395/200.42, 200.46-200.49, 200.57-200.59, 200.62, 200.72-200.74, 702-703; 707/200-204, 100-103, 10**

[56] References Cited**U.S. PATENT DOCUMENTS**

4,274,139	6/1981	Hodgkinson et al.	395/200.33
4,432,057	2/1984	Daniell et al.	707/8
4,558,413	12/1985	Schmidt et al.	707/203
4,604,686	8/1986	Reiter et al.	395/500
4,714,992	12/1987	Gladney et al.	707/206
4,714,995	12/1987	Materna et al.	707/201
4,745,559	5/1988	Willis et al.	705/37
4,746,559	5/1988	Nishikawa	428/142
4,815,030	3/1989	Cross et al.	707/10
4,974,149	11/1990	Valenti	345/200.47
5,008,814	4/1991	Mathur	395/200.51
5,008,853	4/1991	Bly et al.	345/331
5,019,963	5/1991	Alderson et al.	707/201
5,133,075	7/1992	Risch	707/201

(List continued on next page.)

OTHER PUBLICATIONS

C. Bowman, P. Danzig, D. Hardy, U. Manber, M. Schwartz & D. Wessels "Harvest: A Scalable, Customizable Discovery and Access System" Mar. 12, 1995.

D. Hardy & M. Schwartz "Customized Information Extraction as a Basis for Resource Discovery" Mar. 1994.

William G. Camargo "The Harvest Broker," Dec. 1994.

D. Bulterman, G. van Rossum and R. van Liere "A Structure for Transportable, Dynamic Multimedia Documents" US-ENIX, Summer '91 Nashville, TN.

(List continued on next page.)

Primary Examiner—Krisna Lim

Assistant Examiner—Bharat Barot

Attorney, Agent, or Firm—Wolf, Greenfield & Sacks, PC

[57] ABSTRACT

An automated communications system operates to transfer data, metadata and methods from a provider computer to a consumer computer through a communications network. The transferred information controls the communications relationship, including responses by the consumer computer, updating of information, and processes for future communications. Information which changes in the provider computer is automatically updated in the consumer computer through the communications system in order to maintain continuity of the relationship. Transfer of metadata and methods permits intelligent processing of information by the consumer computer and combined control by the provider and consumer of the types and content of information subsequently transferred. Object oriented processing is used for storage and transfer of information. The use of metadata and methods further allows for automating may of the actions underlying the communications, including communication acknowledgements and archiving of information. Service objects and partner servers provide specialized data, metadata, and methods to providers and consumers to automate many common communications services and transactions useful to both providers and consumers. A combination of the provider and consumer programs and databases allows for additional functionality, including coordination of multiple users for a single database.

126 Claims, 47 Drawing Sheets

